

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: )  
 ) Group Art Unit: 3736  
Riaziat et al. )  
 ) Examiner: Unknown  
Serial No.: Not Yet Assigned )  
 )  
Filed: August 27, 2001 )  
 )  
For: APPARATUS AND SYSTEM FOR )  
POSITIONING A PATIENT )

PRELIMINARY AMENDMENT

BOX PATENT APPLICATION  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please enter the following amendments prior to substantive examination of the application.

IN THE TITLE

Please replace the Title located at page 1, lines 2-3 with the following:

APPARATUS AND SYSTEM FOR POSITIONING A PATIENT.

IN THE CLAIMS

Please cancel claims 1-27 and 36-37 without prejudice to pursue in a later application.

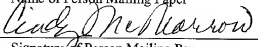
CERTIFICATE OF MAILING  
(37 C.F.R. §1.10)

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09440679-082701

Please amend claims 33-34 and add new claims 38-49 as follows:

33. (Amended) A system for identifying a position of a patient comprising:
- one or more optical imaging apparatus;
  - a marker block having a surface;
  - two or more reflective elements located on said surface, said two or more reflective elements having known relative positioning among each other; and
  - said marker block positioned such that at least two of said two or more reflective elements are viewable by said one or more optical imaging apparatus.
34. (Amended) The system of claim 33 in which said two or more reflective elements are retro-reflective elements.

New Claims:

38. (New) The system of claim 33 in which absolute coordinate of said one or more optical imaging apparatus is known.
39. (New) The system of claim 33 in which viewing orientation of said one or more optical imaging apparatus is known.

40. (New) The system of claim 33 in which relative absolute coordinate of said one or more optical imaging apparatus is known.
41. (New) The system of claim 33 in which said one or more optical imaging apparatus comprises CCD cameras.
42. (New) The system of claim 33 further comprising a computing device to receive output information from said one or more optical imaging apparatus, the computing device having a processor configured to determine the position and orientation of said marker block.
43. (New) The system of claim 33 further comprising a video display device to display a video image of said patient.
44. (New) The system of claim 43 in which said video image comprises real-time images of said marker block.
45. (New) The system of claim 43 in which said video image comprises real-time images of said patient.
46. (New) The system of claim 33 further comprising a video display device to display a video image of said patient.

47. (New) The retro-reflective marker of claim 28 in which said flat surface forms a mounting area.

48. (New) The marker block of claim 30 that is formed of styrofoam.

49. (New) The marker block of claim 30 comprising a shape to fit a fixture that attaches to a patient body.

REMARKS

The present application is a divisional of Appl. No. 09/178,385 (U.S. Pat. 6,279,579). The presently pending claims correspond to the claims identified as Group II in the Office Action of April 25, 2000 for the prior application.

Respectfully submitted,  
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Dated: 8-27-07

Pm.  
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**Marked Up Version**

33. A system for identifying a position of a ~~detecting a marker block in a patient treatment~~  
~~system~~ comprising:

one or more ~~an~~ optical imaging apparatus;

a marker block having a surface;

two ~~one~~ or more reflective elements located on said surface, said two or more reflective  
elements having known relative positioning among each other; and

said marker block positioned such that ~~to reflect light from~~ at least two of said two ~~one~~ or  
more reflective elements are viewable by ~~to~~ said one or more optical imaging apparatus.

34. The system of claim 33 in which said two or more reflective elements are retro-reflective  
elements.

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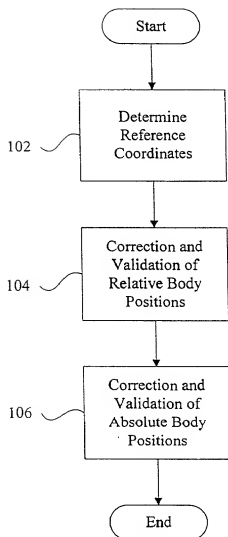


Fig. 1

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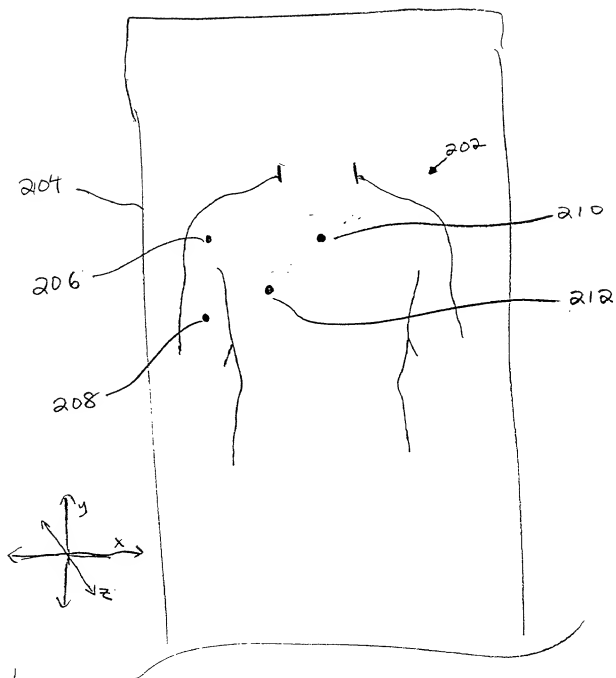
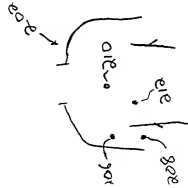
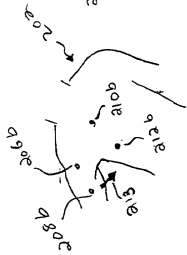


Figure 2

Reference Position



Initial Patient Position



After correction of relative positioning



After absolute position correction

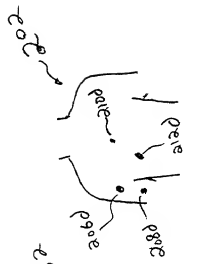


Fig. 3a

Fig. 3b

Fig. 3c

Fig. 3d



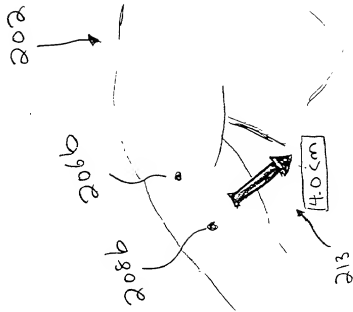


Fig. 3e

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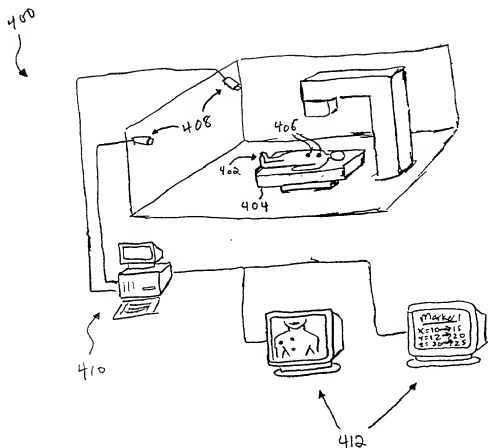


Fig. 4

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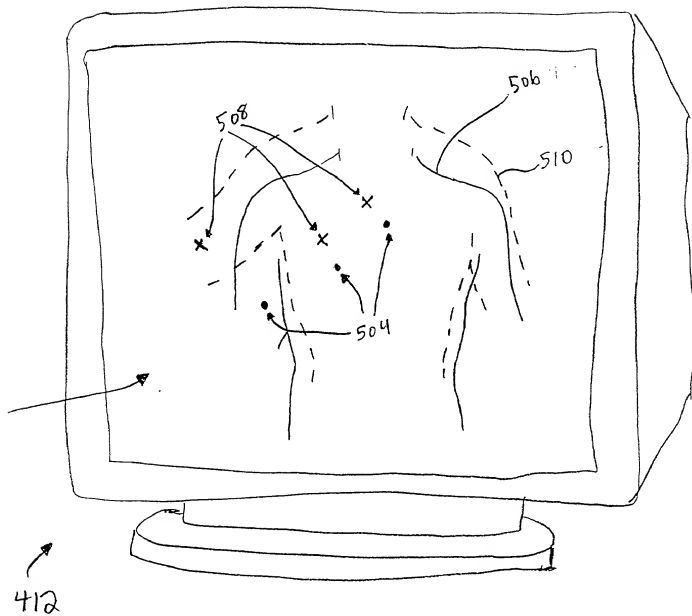


Figure 5

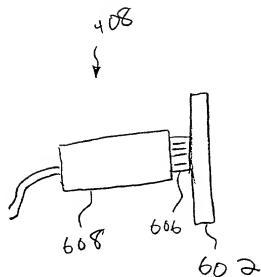


Fig. 6a

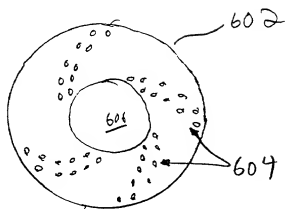


Fig. 6b



Fig. 7a

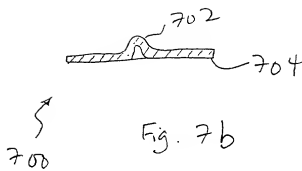
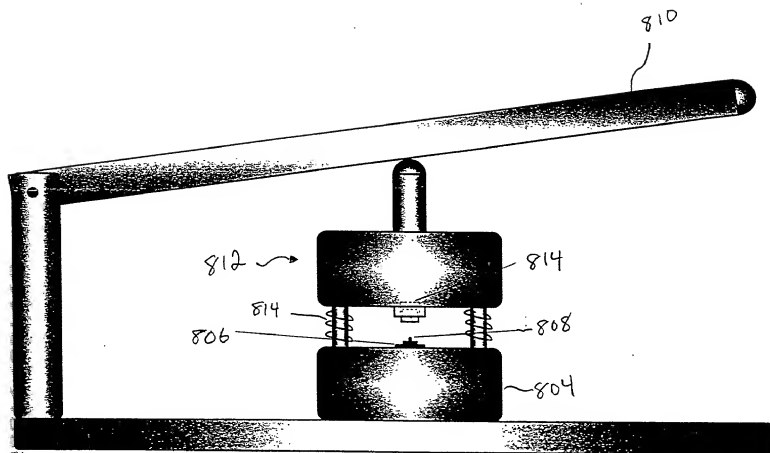


Fig. 7b



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Fig. 8

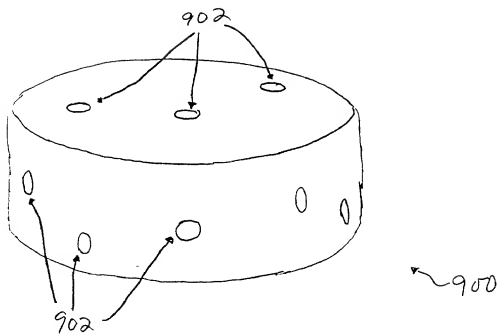


Fig. 9

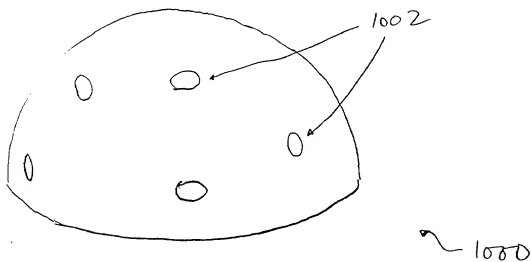


Fig. 10